REMARKS

Applicants appreciate the thoroughness with which the Examiner has examined the above-identified application. Reconsideration is requested in view of the remarks below.

No claims have been amended.

Rejection under 35 USC § 103

The Examiner has maintained the rejection of claims 1-12, 14, 16-20, 24 and 42-47 under 35 USC §103(a) as being unpatentable over Giglia (US Patent No. 4,929,502) in view of Sawan et al. (US Patent Nos. 5,817,325 or 5,681,468) as further evidenced by Palmer et al. (US Patent No. 6,406,594), as set forth in the prior Office action mailed on December 29, 2008.

Applicants continue to disagree and submit that the Examiner has not considered the claims as a whole.

As recited, independent claim 1 is directed to an integrated paper having active particles immobilized therein, whereby the integrated paper has a plurality of fibrillated fibers, active agents and a microbiological interception enhancing agent, all of which are immobilized within the paper. The integrated paper also has a mean pore size of less than or equal to about 2 microns. As is recited in the claims, the microbiological interception enhancing agent is immobilized within and resides throughout the integrated paper. The fibrillated fibers have an average fiber diameter of less than about 1000nm and are fibrillated at a temperature greater than about 30°C. The active agents may include metals, metal salts, metal oxides, alumina, carbon, activated carbon, silicates, ceramics,

zeolites, diatomaceous earth, activated bauxite, fuller's earth, calcium sulfate, titanium dioxide, magnesia, magnesium hydroxide, magnesium oxide, manganese oxides, iron oxides, perlite, talc, clay, bone char, calcium hydroxide, calcium salts, or combinations thereof.

An essential distinction between the present invention and the prior art is that the present microbiological interception enhancing agent resides on a portion of some of the fibrillated fibers and/or active agents that are immobilized within the integrated paper, such that, this microbiological interception enhancing agent is also immobilized within and resides throughout the entire thickness of the integrated paper. That is, the microbiological interception enhancing agent is a biologically active metal precipitated with a counter ion of a cationic material that is residing on the portion of fibers and/or active agents that reside within and throughout the entire thickness of the integrated paper to form a colloidal metal precipitate within and throughout the integrated paper on a surface of such fibrillated fibers and/or active agents. Again, the fibers and/or active agents residing within and throughout the entire thickness of the integrated paper have on portions thereof the present microbiological interception enhancing agent, such that, the microbiological interception enhancing agent also resides within and throughout the entire thickness of the integrated paper.

Claims 2-7, 9-12 and 42-47 are dependent from independent claim 1 and, as such, all include the limitation that the microbiological interception enhancing agent is immobilized within and resides throughout the integrated paper, as well as add further limitations thereto.

Independent claim 14 is directed to an integrated paper with a mean flow path of less than about 2 microns, whereby the paper includes a plurality of lyocell fibers, active carbon particles and a microbiological interception enhancing agent, all of which are immobilized within and reside throughout the paper. The lyocell fibers have an average fiber diameter of less than or equal to about 400 nm and fibrillated at a temperature greater than about 30°C. The activated carbon particles have a mean flow path of less than about 2 microns. Since the microbiological interception enhancing agent resides on a portion of some of the fibrillated lyocell fibers, which are immobilized within the paper, then the microbiological interception enhancing agent is also immobilized within and resides throughout the paper. The microbiological interception enhancing agent is a biologically active metal precipitated with a counter ion of a cationic material that is residing within and throughout the paper on the portion of fibers to form a colloidal metal precipitate within and throughout the paper.

Claims 16-19 are dependent upon independent claim 14 and, as such, include the limitations thereof as well as add further limitations thereto.

Independent claim 20 is directed to an integrated paper with a mean flow path of less than about 2 microns having a plurality of fibrillated fibers, active agents and a microbiological interception enhancing agent, all immobilized within and residing throughout the integrated paper. The fibrillated fibers have an average fiber diameter of less than about 1000nm. Like that of independent claims 1 and 14, the microbiological interception enhancing agent is a biologically active metal precipitated with a counter ion of a cationic material that is residing on at least a portion of at least some of the fibrillated

fibers and/or active agents to form a colloidal metal precipitate on surfaces thereof, such that, like that of the fibrillated fibers and/or active agents, the microbiological interception enhancing agent is also immobilized within and resides throughout the paper. That is, since the fibrillated fibers and/or active agents themselves are treated with the microbiological interception enhancing agent prior to forming the paper, then once the active agents and fibrillated fibers (both of which have the microbiological interception enhancing agent thereon) are admixed one another, the final structure provides an integrated paper having the fibers, active agents and microbiological interception enhancing agent all immobilized within and residing throughout such paper.

It is submitted that it is improper to focus on the obviousness of individual components or substitutions, rather than on the invention as a whole, *Kimberly-Clark Corp. v. Johnson & Johnson*, 745 F.2d 1437, 1448, 223 USPQ 603, 610 (Fed. Cir. 1984); *Gillette Co. v. S.C. Johnson & Son, Inc.*, 919 F.2d 720, 724, 16 USPQ2d 1923, 1927 (Fed. Cir. 1990).

Applicants assert that the Examiner has not considered the invention as a whole by not taken all claimed limitations into consideration, to wit, that the present integrated papers have fibrillated fibers, active agents and a microbiological interception enhancing agent, all immobilized within and residing throughout the integrated paper. Unlike that of the prior art, the presently claimed microbiological interception enhancing agent is immobilized within and resides throughout the entire thickness of the integrated paper. That is, applicant's microbiological interception enhancing agent resides through all parts or everywhere within the claimed integrated papers –not just on surfaces or within pores

thereof like that of the prior art. *See*, "throughout: in or to every part : everywhere <of one color *throughout*>" throughout. (2009). In Merriam-Webster Online Dictionary. Retrieved September 16, 2009, from http://www.merriam-webster.com/dictionary/throughout; and "throughout: In or through all parts; everywhere: The material is flawed throughout." throughout. (2009). In The Free Dictionary. Retrieved September 16, 2009, from http://www.thefreedictionary.com/throughout.

As for the Giglia (US Patent No. 4,929,502) reference, as recognized by the Examiner, Giglia does not disclose or suggest a microbial interception enhancing agent on portions of selected fibers. Rather, Giglia is limited to disclosing fibrillated fiber precursors that are defined by their Canadian Standard Freeness in combination with their Tensile Strength when formed into a sheet. The fibers of Giglia can be used to make fabrics that comprise the fibrillated fiber alone or in combination with a particle of a toxic absorbing agent or filtration material, which may include activated carbon fibers or powders. Giglia, Col. 6, ll. 33-37. However, nowhere in Giglia is it disclosed or suggested that a microbial interception enhancing agent resides on a portion of selected ones of its fibrillated fibers and/or particles. As such, Giglia does not disclose or suggest that a microbial interception enhancing agent resides within and throughout the integrated paper (i.e. throughout the entire thickness thereof), as is claimed.

Furthermore, Giglia teaches that temperature control of the slurry being processed is critical for making the fibrillated fibers disclosed therein, whereby processing temperatures greater than 30°C undesirably formed fibers having CSF levels of 500-700. (Col. 5, ll. 5-30.) Rather, in accordance with Giglia to make the fibrillated fibers disclosed

therein it is critical to maintain the temperatures of the slurry during fibrillation to below 30°C to provide the fibers with the critical parameters of CSF in combination with Tensile Strength disclosed therein. The fibers of the present invention are different from the fibers disclosed in Giglia. As is claimed, the present fibrillated fibers are different since the fibers are fibrillated at a temperature greater than 30°C and still have an average fiber diameter of less than about 1000 nm. According to Giglia, the fibers disclosed therein do not have this property. That is, if the fibers disclosed in Giglia are fibrillated at temperatures greater than 30°C, then the processed fibers are provided with CSF levels of 500-700.

It is also again submitted that Giglia does not disclose the claimed pore size limitations, nor are they inherent therein. While the Examiner concurs that Giglia does not disclose the claimed pore size limitations, the Examiner takes the position that "this property seems to be inherent to the paper taught by [Giglia], since they are made using the same process and using the same raw materials as claimed, or at least the minor modification to obtain the pore size in the range as claimed would have been obvious to one of ordinary skill in the art as an optimization of a result effective variable." Applicants disagree.

Based on established case law, in relying on a theory of inherency, the Examiner must establish, through evidence or scientific reasoning, that the asserted inherent characteristic necessarily flows from the teachings of the prior art. See, *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999). "Inherency . . may not be established by probabilities or possibilities. The mere fact that a certain thing *may* result from a given set of circumstances is not sufficient." *Ex Parte Whalen*, 89 USPQ2d 1078, 1083 (BPAI 2008),

citing *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, (CCPA 1981). *See also Ex parte Skinner*, 2 USQP2d 1788, 1789 (BPAI 1986) ("[T]he examiner must provide some evidence or scientific reasoning to establish the reasonableness of the examiner's belief that the functional limitation is an inherent characteristic of the prior art.") Applicant submits that there is no evidence or scientific reasoning in the record to support the Examiner's inherency rejection.

Here, the Examiner has provided no evidence or scientific reasoning to establish the reasonableness of the examiner's belief that the functional limitation is an inherent characteristic of the prior art. The Examiner's reliance on the probabilities or possibilities that this property (i.e., of the pore size) "seems" to be inherent is not supported by case law, and as such, does not support a finding of inherency. *Id.*

To overcome Giglia's deficiency of not disclosing a microbial interception enhancing agent on portions of selected fibers, the Examiner cites the Sawan patents (US Patent Nos. 5,817,325 or 5,681,468) stating that such patents teach applicant's interception enhancing agent. Applicant disagrees and continues to submit that the Sawan patents are both limited to forming surface coatings on a structure.

Neither Sawan et al. (US Patent No. 5,817,325 hereinafter "Sawan '325") nor Sawan (US Patent No. 5,681,468 hereinafter "Sawan '468") disclose or suggest an integrated paper having fibrillated fibers, active agents and a microbiological interception enhancing agent, all of which are integrated within and throughout the paper itself. Again, both Sawan '325 and Sawan '468 are limited to coatings on a substrate or to freestanding

antimicrobial films (not attached to a substrate). (Sawan '325, Col. 4, ll. 9-32; Sawan '468, Col. 4, ll. 7-24, col. 9, ll. 10-16 and col. 10, ll. 15-27 and Example 12 at col. 15, ll. 13-34.)

Again, an essential distinction between Sawan '468 and the present invention is that in Sawan '468 its filter is partially coated on a downstream surface, within a plurality of pores, and/or at least partially coated on an upstream surface (col. 6, ll. 42-57), the metal coating of Sawan '468 has a uniform thickness on the surface and within the pores of the filter. (Col. 9, ll. 44-52, and See, Examples 2-5 and 10.) That is, Sawan '468 does not disclose, contemplate or suggest precipitating a biologically active metal with a counter ion of a cationic material residing on the fibers or particles that make up an integrated paper, and then making the integrated paper using such treated fibers/particles, such that, a microbiological interception enhancing agent resides within and throughout an entire thickness of the integrated paper, as is currently claimed.

Sawan '325 is also limited to coatings or layers using the coating formulations disclosed therein on a wide range of materials, whereby the coating or layer is applied directly to the surfaces. (Col. 11, ll. 14-19.) Sawan '325 does not disclose, contemplate or suggest an integrated paper made of a plurality of fibers whereby at least a portion of at least some of these fibers have been treated with a microbiological interception enhancing agent so that the microbiological interception enhancing agent resides within and throughout such integrated paper, as claimed.

Again, applicant's microbiological interception enhancing agent is integrated within and throughout the paper itself —not just residing as a surface coating/layer on a substrate surface as is disclosed in Sawan '468 and Sawan '325.

Palmer et al. (US Patent No. 6,406,594) discloses the precipitation of additives onto papermaking fibers is known for fiber loading. This reference only refers to the precipitation of additives onto papermaking fibers in connection with precipitating filler materials, namely, calcium carbonate filler. (See, Palmer, col. 1, ll. 41-45; col. 3, ll. 10-13; col. 6, ll. 1-24; col. 9, ll. 42-45; col 12, ll. 38-50; et al.) Nowhere in Palmer et al. is it disclosed, contemplated or suggested to form a microbiological interception enhancing agent by precipitating a biologically active metal with a counter ion of a cationic material that is residing on fibers and/or active agents to form a colloidal metal precipitate on surfaces of such fibers and/or active agents, whereby these treated fibers and/or active agents are formed into an integrated paper so that the microbiological interception enhancing agent is also immobilized within and resides throughout the integrated paper. Accordingly, Palmer does not overcome the deficiencies of Giglia, Sawan '468 or Sawan '325, alone or in combination.

Applicants continue to submit that the Examiner has pointed to individual components of applicants claimed invention rather than taking applicants' claims as a whole. An invention "composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. " *KSR Int'l Co. v. Teleflex Inc.* 127 S.Ct. 1727, 1741, 82 USPQ2d 1385, (2007). The record must show that those of ordinary skill in the art would have had some "apparent reason to combine the known elements in the fashion claimed." *Id.* at 1741. Here the record contains no such finding. Rather, the Examiner has merely taken the position that it would

have been obvious at the time the invention was made to a person having ordinary skill in the art to modify Giglia in view of Sawan '468, Sawan '325 and Palmer, or even in combination with the Celanese Acetate reference, to derive at applicant's invention. This position in contrary to applicable case law in this area.

Applicants submit that the structures of the present invention are different from that of the cited references, such that, the cited references, either alone or in any proper combination thereof do not anticipate nor render obvious the present invention.

It is respectfully submitted that the application has now been brought into a condition where allowance of the entire case is proper. Reconsideration and issuance of a notice of allowance are respectfully solicited.

Interview Request

For purposes of enhancing prosecution of the present application, Applicants respectfully request an Examiner interview to discuss the present invention and the cited prior art of record.

Respectfully submitted,

Kelly M. Nowak
Reg. No. 47,898

DeLIO & PETERSON, LLC
121 Whitney Avenue
New Haven, CT 06510-1241
(203) 787-0595